Theory notes and ROADMAP:

Two chemical evolution models: Raffa+Rosa and Laura+Daniele

(1) Present both approaches in paper
(2) Figure out a way to present model results that selects one or two parameters that single out trends in the data: data are SNAPSHOTs, and models are TRACKS. **Laura** chose age and stellar mass. This is good!
(3) However, age (and stellar mass) is (are) not directly observable so **Raffaella** suggests selecting models on the basis of a *threshold SFR*. This is a directly observable quantity, so models can be straightforwardly compared with observations.

Therefore, select data and models in terms of SFR (SFR surface density more difficult observationally).

M_{gas}, n_{HI} in → Σ_{gas} in, then n_H2 which governs dynamical times. Increase grid of initial conditions in terms of HI surface density.

MZR, SSFR, KS law use empirical CO → gas mass comparison with model predictions to (try to) constrain α_{CO} (X factor)!

Use additional gas-mass fraction vs. stellar mass constraints to model age and evolutionary state.

Theory notes and ROADMAP, continued:

DUSTY models (Simona): increase numberical accuracy of DUSTY for high tau, in order to suppress UV possibly spurious features.

Notice that increasing tau (for uniform density distribution) makes SED peak toward longer wavelengths with the SAME geometry, SAME heating source, and same Tin.

New scheme for molecule formation (step 2, comes AFTER the present epoch of models): Stephanie will provide T-dependent recipe for molecule formation, temperature profiles couple molecule formation. But need gas phase abundances and physical conditions. Need to investigate with Stephanie temperature dependence and formulation of a new approach to the Krumholz scheme, based on Stephanie's recipe.

How to incorporate this in the evolutionary models? First guess: **Rosa** suggests start with dust-free H2 “seed”. After that, H2 forms according to Stephanie's formulation, and we follow three families of DUSTY models according to “hyper-dense”, “compact”, “diffuse” (see **Laura's** presentation).

Observation notes and ROADMAP:

BCD sample(s):

(1) WSRT, ATCA for HI of BCD sample; best to do this before VLA, and perhaps also start with Effelsberg and GBT(?)

(2) HCO+ in Spring for N1140 and equatorial sample (IRAM)

(3) SMA to do CO(3-2) for NGC1140 and/or equatorial sample but *check sensitivity*

(4) ~~ALMA ES high-excitation lines (band 6, 7) for low-Z BCDs. Scratch this.~~

GRBHs already approved for *Herschel* (combine GRBH and MODULO teams):

1) ALMA ES middle/low-excitation lines but redshifted to 3mm for high-z GRBHs, This sounds better! Look up sample and compare reshifts, SFRs, KS-law inferred predictions.
2) **Leonardo** says important band 3, 3mm, do CO(1-0) for low redshift! [CII] overabundant at low metallicities *(reference for this?)* should be redshifted to band 9 for z=2, 3?
3) SFR necessary: > 30 Msun/yr (33x MW) and need submm detection.
4) For low-z low Z/Zsun NEED single-disk detection and extreme case